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VOL. VI MUSKOGEE, OKLAHOMA, AUGUST, 1913 No. 3

DR. CLAUDE A. THOMPSON, EDITOR-IN-CHIEF.

MILK AS A FOOD FOR INFANTS.

J. T. Martin, Oklahoma City, Oklahoma.

The study of the chemistry of milk reveals the advantages and the difficulties of this food as the nutriment of infants. The Annals of Medical Practice gives the following analysis: Water, 85%; solids, 15%; Carbohydrates (i. e. lactose), 38%; fats, 33%; proteids, 25%; mineral salts, 4%, consisting of phosphates and chlorides of sodium, potassium and calcium. There are in milk many other substances; for instance, bacteria which sours it, bacteria which ripens cream and cheese, enzymes, colloidal substances, milk cells and serums.

The carbohydrate element is lactose or milk sugar. The fats are similar to those of human milk save that the globules are smaller in the latter. The proteid in cows' milk consists of casein and lactalbumim in the ratio of five to one and is readily coagulable by acid and by rennin. In woman's milk the proportion is one to one and it is not so readily coagulable by either acid or rennin. In asses' milk the ratio between the two proteids is in the proportion of one to three and is the least coagulable by either acid or rennin. Casein is an irreversible or coagulable, unstable colloid, while lactalbumin is a reversible or stable colloid. Colloids are ultramicroscope motile bodies that protect the proteids. Alexander and Bullowa claim that bald chemical analysis without considering the principle of colloidal protection is an insufficient criterion on which to base an opinion as to the digestibility or availability of milk for food.

Chemical Properties. 1. Freshly drawn milk possesses a bactericidal action to some micro-organisms and an inhibitory one to others.

2. This activity is destroyed at 68° C., is materially injured at 55° C. This bacterial inhibitory action varies with individual cows and disappears with age of milk.

3. Coagulation and acidity of cows' milk do not depend absolutely on the bacterial contents. Natural properties of milk soon overshadow the metabolic products of bacteria.

4. Sterile cow's milk is acid to phenoephthalein and increases very slowly in acidity independently of bacterial metabolism, due probably to the destruction of colostrum cells.

Ferments. During recent years Warfield has identified a peptid splitting ferment in milk and which is destroyed at 75° C. Tunnicliff from late experiments concludes that normal human milk is especially high in opsonins from streptococci, staphylococci and tubercule bacillus.

Cells. Milk cells vary in number from 100,000 to 10,000,000 per cubic centimeter. These cells are [illegible] leucocytes of the blood stream, having different staining reaction, containing no polymorphynuclears, are nonphagocytic and non-ameboid. Hewlitt, Villar and Revis conclude that they are tissue cells.

Lacti-Serum. (Blondel). Milk serum ferments are similar to animal extracts and contain oxydases. Injections of milk serum lowers blood pressure of the arteries and capillaries. Blondel calls this regularization. He has used milk serum therapeutically in puerperal infections, pneumonia, typhoid and arterial hypotension of arterial sclerosis. Thomsen of Copenhagen found the Wasserman more positive in milk serum than in blood serum of syphilitic women.

With this brief summary of the chemistry of milk we will proceed to the consideration of milk as a food for infants. It is universally admitted that next to breast milk, modified cow's milk is the best available food. That the giving of this is beset with difficulties the school of experience amply teaches. Those that have the opportunity and privilege of milk laboratories find in it a relief for many of their difficulties.. We who are not so blessed refer to the complicated tables whose labyrinthian details require trained skill to follow. Of late I have been using a method that enables me more closely to approximate laboratory methods of feeding and at the same time is simple.

From a quart bottle of herd (4%) milk:

1. Remove the upper two ounces for table use.
2. Upper 12 ounces gives 7% milk.
   Upper 16 ounces gives 6% milk.
   Upper 20 ounces gives 5% milk.
   Upper 24 ounces gives 4% milk.
   Whole milk gives 3% milk.
   Remove two ounces, remainder is 2% milk.
   Remove two more ounces, remainder is 1% milk.

This table is easily remembered, as each lower per cent simply adds four ounces of milk taken. When lower per cent than 3% is wanted, remove two ounces of top for each lower per cent. In making a 20-ounce mixture, every ounce of 7% milk contains 35% fat and each lower per cent milk adds .05% less. Each ounce of milk in any of above table contains .175% proteid and .225% of carbohydrate. Adding 1½ tablespoonfuls of lactose to twenty ounce mixture increases the carbohydrate 1.75%. We remove the upper two ounces because the bacteria rise with

the cream and these two ounces contain nearly one-half of the bacterial content of the quart bottle.

To illustrate the use of the table, suppose for a six-months-old baby we desire a milk of 3.5% fat, 7% sugar, 1.75% proteid. Ten ounces of seven per cent milk gives the required amounts when the milk sugar is added. If we wish to increase the proteid to 2.10% and maintain the fats as present, viz., 3.50%. Dropping one in the table, it is readily seen that 12 ounces of 6% milk gives us the required formula. Percentage milk is simply applied dietetic chemistry of milk and is far from the most important element in successful feeding.

Fat globules of cow's milk are larger but similar to those of woman's milk, hence disturbances due to fats are quantitative rather than qualitative If undigested fat appears in the stool of a bottle-fed baby, the quantity of fat may be readily reduced. On account of the larger globules, the fat of cow's milk is less absorbable than that of a woman. Wentworth found in the feces of babies fed upon cow's milk fifty per cent more fat than in those fed on mother's milk of same fat per cent.

Sugar, the carbo-hydrate element in milk, causes many if not most of the disturbances of bottle feeding. Neff attributes to sugar indigestiou the symptoms of coma, loss in weight, glycosuria, albuminuria, diarrhoea of green stools, leucocytosis of 25,000. Finkelstein of Berlin and eiweiss-milch fame says: "Stop sugar and many fatty diarrhoeas disappear." Sugar too is easily controlled in the intake.

Proteids. According to Holt and his followers, this is the chief disturber of bottle feeding. Finkelstein, Abt and others now claim less disturbance from the proteid than from the other elements. It is certain that casein forms curds that tend to increase in size by agglutination. Hard, tough curds are not only difficult to digest, but are a source of irritation. We may overcome this tendency of the unstable colloids by boiling or by the addition of chemicals. Boiled milk in the test tube or in the stomach does not form the tough, hard curd that raw milk does. Lime water is added to make the milk alkaline and to break up the curd. It does the latter to a slight extent but, due to the excessive stimulant action on the secretion of hydrochloric acid in the stomach, it fails in the former object as affirmed by Clark in the Journal of the Medical Sciences. Sodium citrate solution added to the milk accomplishes both of these objects, viz., breaks up the curd and by its action in the stomach reduces the acidity. With Dr. James Clemens of St. Louis, I believe this to be more important than exact percentages.

The subject of proteids must not be closed without discussing eiweiss milch of Finkelstein. This albumen milk, as it is called, is prepared by coagulating one liter of milk with liquid rennin for thirty minutes at 42° C. Put the whole mass in a linen bag and let drip one hour. Stir the coagulated casein in one-half liter of water and work through a hair sieve twice. Stir in one-half liter of buttermilk. The end product, eiweiss milch, contains albumen 3%, fat 2.5%, sugar 1.5%, ash .5 per cent. This

albumen milk is well tolerated in many cases of indigestion, especially of the sugar type. Herman claims that after a lengthy trial of nutritional disturbances of infants albumen milk showed twice the rate of improvement compared to other mixtures.

Here I wish to note that the pediatricians of Europe seem to have less difficulty with the proteid element than we do here in America. But in Europe the milk used in infant feeding is usually boiled and records of institutions not boiling the milk show the same proteid indigestion that bothers us. Boiling milk, like adding sodium citrate, breaks the tendency of casein to form large, hard curds. Eiweiss milk with the curd mechanically broken, has a high albumin content that is easily handled. Finkelstein says his eiweiss milk is not for healthy babies.

Another disturbing element in the feeding of cow's milk is the salts of the alkalies and alkaline earths. The inability to handle mineral salts is marked in infancy; 34% of these products are excreted unchanged. Koplik attributes a great deal of our difficulties to these elements. Neff claims that 100gm. of sodium chloride solution will cause a temperature of 104° F. in four hours.

Improper or bad milk is a constant danger in bottle feeding. Bad milk may come from diseased cows, unsanitary stables, poor methods of preservation, or faulty manner of distribution. To overcome these dangers some districts have yearly inspection of herds by competent veterinarians, tuberculin test, rigid inspection of methods of preservation and distribution. To overcome errors in these sanitary measures steriliation, pasteurization and adding of preservatives are used. Finkelstein, Lau-Clayton, Vincent and the majority of pediatricians consider raw milk far better than that which has been sterilized or pasteurized, provided we can be reasonably assured of its cleanliness and purity. Pasteurization by the increase later of putrefactive bacteria or by other causes, is less valuable for feeding to babies.

The lack of reliable raw milk frequently compels us to adopt artificial means to render it serviceable for feeding. Pasteurization is the usual process. Of the commercial pasteurizers the holding type meets with the most approval. In this method the milk is rapidly heated in the heater and then passed to the holder, where it is held at a high but reducing temperature. It takes seven to ten minutes of preparatory steaming to make ready for the milk, and this preparatory steaming must be repeated at each interruption of the process if efficiency is to be obtained. Shorer's investigations show that the automatic heaters vary 21° F from the intended temperature and that the top and bottom of the holder vary over 13° F. Even with this inefficient process, it takes a Chicago dairy three hours and fifty minutes to pasteurize the daily output. The investigations at Chicago show the unreliability of commercial pasteurizing processes.

Clean milk—milk obtained from healthy cows in sanitary barns by clean milkers, milk that is properly preserved by refrigeration and properly distributed—is the ideal to which we all look with longing. That it can beaccomplished

with monetary profit has been proven. One dairy in Wisconsin, according to Hoard's Dairyman, that is a hundred miles from the Chicago market, delivers to the dealers in that city at the price of six cents per quart milk which shows a bacterial count of 1,000 to 2,000 per cubic centimeter, and makes a fair profit thereon. In the study of this subject by the Chamber of Commerce of Rochester, N. Y., J. R. Williams demonstrated the practicability of obtaining clean milk at less than the present price of market milk.

Certified milk is a step in the right direction. Certified milk may be defined as the product of dairies operated under a Medical Milk Commission, which body is appointed for voluntary service by a Medical Society. The milk is required to fulfill standards of quality, purity, and safety to insure its adaptability for chemical purposes and for the feeding of infants. These requirements are enforced by the following regulations:

1. Milk must be fresh when delivered, under 24 hours old.
2. Be whole milk and raw milk.
3. Unchanged by heat or cold. Kept at 50° F.
4. Contain 12% solids, 3.5 to 5% fats.
5. Absence of foreign material.
6. Have the lowest possible bacterial count, least amount of dust, best dairy hygiene.
7. Not contain over 10,000 bacteria per cc.
8. Milked by medically examined employes.
9. From herds that have been inspected by competent veterinarians.
10. Certified milk attempts to solve the milk problem as regards the herd, sanitary condition of the milk sheds and buildings, as regards preservation and distribution of the milk. This is one of the voluntary public services well within the scope of every county medical society.

In resume will say:

1. Clean, sterile, raw milk of good quality is the ideal.
2. Clean milk can be obtained at moderate cost.
3. Certified milk allows those who desire to obtain an improved milk.
4. If milk is unclean it is dangerous. Get other milk; if this is impossible, boil it.
5. Commercial pasteurization is not reliable. Obtain the best milk you can, and this is the best available artificial food for infants. Proceed to adapt it to the individual, bearing in mind that for infants:
1. Carbo-hydrates are a great source of trouble.
2. Mineral salts may be a source of difficulty.
3. Break the large curd-forming tendencies of casein by sodium citrate or boiling.

A PLEA POR THE ROUTINE EXAMINATION OF THE BLOOD FOR THE MALARIAL PARASITE.

L. A. Mitchell, M. D., Frederick, Oklahoma.

In a paper of this kind there is nothing to be gained by delving into the voluminous literature of malaria. Nor is there any need to expect fame by writing on such a commonplace subject. Rather let us be content to give the credit to Laveran, Manson and our own Craig for their scientific study of the disease. The combat waged for the past ten years on the Isthmus of Panama against the mosquito, has made Col. Gorgas a man of world-wide prominence. He has converted a pest hole into a health resort and the successful termination of the canal is a triumph of malarial prophylaxis rather than a great engineering feat.

It is the purpose of this paper to show the great prevalence of malaria in Oklahoma, though obscure it may be at times, and to call your attention to the necessity of looking at the red corpuscles before diagnosing a serious disease. The proper diagnosis of malaria is neglected more today by the general practitioner than any other one thing which comes to his notice. The old adage that "familiarity breeds contempt," is as true with reference to medicine as it is in any other branch of human endeavor. Malaria has been a household word with most of us since childhood, and in the Southern homes quinine is considered as essential to housekeeping as table salt. This familiarity has led us to regard malaria as an insignificant ailment closely related to sunburn, whose treatment is beneath the dignity of a doctor, and thus belongs to the housewife. The treatment of malaria does belong to the housewife so long as the attack is typical. She can then make a diagnosis, and the treatment is universally known. It does not take a doctor to diagnose periodic chills, fever and sweats as malaria, but experience leads me to say that not one-half the cases of malaria manifest themselves in this manner. Only a small per cent have chills, and many cases do not have fever. Thus it becomes our duty as doctors to look beyond the clinical to the microscopical findings if we are to rise above the diagnostic ability of the good housewife. If all cases were typical, we would never see a case of malaria, for then its diagnosis and treatment would fall to the housewife. It is just as reasonable to wait for an intestinal hemorrhage before diagnosing typhoid fever as it is to wait for a chill before diagnosing malaria. As a race it is our custom to pass by the common things. As doctors we are no exception to this rule, for, first of all, we are human beings. If this paper shall stimulate those present to study the blood of their patients and shall succeed in convincing them that malaria is a very common disease in Oklahoma, it shall have fulfilled its mission.

The evolution of the whole question of malaria forms one of the brightest pages on medical history. The word, which means literally "bad air," shows the original idea of its etiology. It is interesting to quote from no less an authority than Strumpell, who says in the second edition of his Text Book on Medicine, written in 1885, that "Numerous

observations only serve to confirm the statement that the soil is the true home and cradle of the malarial poison, and that the virus, escaping thence into the lower strata of the atmosphere, may be taken into the system, probably during inspiration. The poison does not extend far above the surface of the ground and during the night it seems to exist in greater intensity than during the day."

We see how accurate was his observation, but it is well known among the laity of today just how much he missed the true cause. And yet there are those practicing today who believe that malaria may be contracted by inhaling "night air" from stagnant waters. Since the discovery of Laveran, it has been proved over and over that malaria can be transmitted only by the bite of an infected female Anopheles mosquito.

The old idea that chill plus fever equals malaria and that malaria is to be diagnosed only when these symptoms are present, has given way to the positive method of diagnosis afforded in a blood examination. It is now known that many conditions of lassitude, accompanied by a subnormal temperature, are malarial in origin, and will certainly clear up under appropriate antimalarial treatment.

The writer on this subject has an advantage in that there are more things definitely known about it than about almost any other disease known to mankind. For instance, the cause is definitely known; the diagnosis can be positively made; and a cure can be effected in every case when proper treatment is instituted. As a modification of the statement that it positively can be cured under proper conditions, the so-called malarial Hemoglobinuria is excepted, its etiology as yet being in doubt. We further know that a person who is infected with the asexual type of the parasite is a source of danger in a community previously supposed to be free from malaria. These asexual types need only to pass through the mosquito as an intermediate host to cause a spread to other people. It is peculiar how that malaria manifests itself often after slight illness or injury. It is a common cause of post-operative fever even after minor operations. A case report will best illustrate this: A primipara was delivered with forceps, and for five days seemed to be doing well. She at this time developed a slight but rather constant headache, accompanied by a temperature ranging from normal to 101 degrees. Anemia was rather marked. There was no abnormality of the lochia, no chills, but the headache grew worse. A blood examination revealed a heavy infection of malaria, and all her symptoms were relieved by the use of quinine.

However there are still mysteries connected with malaria. The exact cause of a recurrence after several months is not definitely known. We know that the natural resistance of a patient will hold a severe infection in check for a long time, and that acute cases will recover without proper treatment. It has been proved that these are the cases which recur. In many cases improper treatment consists of giving quinine in the dry form. In the tropics it is always given in a solution made by aromatic sulphuric acid. And you will find many cases which this will not control, but

there are few if any cases which will not yield to quinine given hypodermically. Some patients seem to exhibit a tolerance to quinine given by the mouth.

A case report will best illustrate this point: A young man, born and reared in Southwest Missouri, who worked in a bank, was attacked with a febrile disease of some weeks duration. It was first called la grippe, but as his condition did not clear up under appropriate treatment, a suspicion of pulmonary tuberculosis was aroused. He was sent to Southern Texas for six months, but found no relief. He was then told to seek a better climate, and this time he spent six months in Montana and the Panhandle. He again returned to Missouri, but his family physician ordered him to leave again. He then came to Southwest Oklahoma, and took up his residence on a farm. Let it be said that during all this time he never showed one definite sign of consumption, his only symptoms being irregular fever, lassitude and inability to take on flesh. His blood was finally examined, a task requiring about five minutes, and he was found to be suffering from malaria. He was immediately put on quinine in solution and while he would recover from the acute condition, he would have recurrences from time to time in spite of heroic treatment. He was finally put on 10 grains of quinine hydrochloride and urea hypodermically daily, and his chances for complete recovery seem good, he being under observation at this time. Now, I believe this patient has had nothing but malaria all these years.

One of the most remarkable cases of malaria I have ever seen in any climate occurred in Southwest Oklahoma. A farmer of 49 years, born in Kansas, lived for a time in Texas, but came to Oklahoma at the opening of the Comanche country. He had always been in good health. Last fall he began to lose his accustomed good health, his first symptom being numbness of the upper extremities. He later developed irregular fever, persistent vomiting, loss of appetite and weight, difficult breathing, etc. He was sent to Kansas for his health, and finding no relief he went to Claremore, Okla., to be cured of his "stomach trouble." This gave no relief, however, and he came home to die. When first seen he had marked dyspnoea, anemia bordering on cachexia, vomiting, irregular fevers and night-sweats. The fever was of such slight degree that both the patient and his family denied that he had ever had any. A record, however, showed the presence of fever. The liver and spleen were greatly enlarged. A tentative diagnosis of liver abscess was made, and as he refused surgical intervention, a prognosis of much gravity was made. But while waiting for him to die a blood examination was made and a severe infection of malaria was discovered. He was put on quinine and arsenic, and at this time, three months later, he has gained 30 pounds and is able to be about his accustomed business.

Numerous other cases might be reported, but these will suffice to prove to you that malaria does exist in various and at times obscure forms. It has been found closely assimilating cholecytitis, appendicitis, typhoid

fever where fever was present, but the most trouble is had in making a diagnosis where no fever is present. It has been found in children of six months who had passed through part of a single summer, and in patients 75 years old who never lived further south than Oklahoma.

Malaria is a disease which comes to every general practitioner in the state several times a year. It is thus an important subject for us all to consider. So important a question is malaria and its prophylaxis, that no less an organization than the Southern Medical Association has a commission to investigate it. This commission was able to ascertain that malaria is present in every one of the fifteen southern states. The morbidity varies from 25 to 800 cases per 1000 population, and the average mortality is 1%. The following statistics from this commission for the state of Alabama will tend to show what an economical question malaria presents. There occurred 122,200 cases of malaria with a death rate of 1% of the cases; thus there were 1222 deaths. Assuming that each case entailed an expense of ten dollars for professional service and medicine, the morbidity alone in the state of Alabama for one year amounted to one and one-third million dollars. Placing a monetary value of $2000 on each life lost, the 1222 deaths from malaria added 2½ million dollars to the cost of malaria. Thus malaria costs Alabama nearly $4,000,000 annually. Those of us who are practicing along the rivers and in the southern side of Oklahoma have the same conditions to meet as obtain in Alabama. I doubt if there is a county in this state which will not show many infections at some time during the summer or fall.

The point which I want to urge above all others is the necessity of routine blood eaminations to diagnose malaria. You can't cure it unless you treat it, and you can't treat it unless you suspect it. And there are many cases which you will not suspect unless you make a blood examination. We have been going off after new fads and fancies, after rare and new diseases, and have got away from our most common enemy. Why, I am laughed at down in my town when I make a diagnosis of malaria with the microscope, when I actually see the parasite.

In conclusion I wish to make the following resume:

1. Malaria is present in Oklahoma.
2. It often is obscure—often no fever.
3. It presents a big economical question.
4. We can diagnose it positively.
5. Capsules of quinine are often useless.
6. We can cure it.

In view of these facts and in the light of the 20th century, with its microscopes and other aids to diagnose, I maintain that it is almost criminal not to allow a patient five minutes for a blood examination.

DISCUSSION.

The Chairman: When I came to Oklahoma three years ago I had heard a whole lot about malaria. I have been practicing in Oklahoma City

there are few if any cases which will not yield to quinine given hypodermically. Some patients seem to exhibit a tolerance to quinine given by the mouth.

A case report will best illustrate this point: A young man, born and reared in Southwest Missouri, who worked in a bank, was attacked with a febrile disease of some weeks duration. It was first called la grippe, but as his condition did not clear up under appropriate treatment, a suspicion of pulmonary tuberculosis was aroused. He was sent to Southern Texas for six months, but found no relief. He was then told to seek a better climate, and this time he spent six months in Montana and the Panhandle. He again returned to Missouri, but his family physician ordered him to leave again. He then came to Southwest Oklahoma, and took up his residence on a farm. Let it be said that during all this time he never showed one definite sign of consumption, his only symptoms being irregular fever, lassitude and inability to take on flesh. His blood was finally examined, a task requiring about five minutes, and he was found to be suffering from malaria. He was immediately put on quinine in solution and while he would recover from the acute condition, he would have recurrences from time to time in spite of heroic treatment. He was finally put on 10 grains of quinine hydrochloride and urea hypodermically daily, and his chances for complete recovery seem good, he being under observation at this time. Now, I believe this patient has had nothing but malaria all these years.

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Numerous other cases might be reported, but these will suffice to prove to you that malaria does exist in various and at times obscure forms. It has been found closely assimilating cholecytitis, appendicitis, typhoid

fever where fever was present, but the most trouble is had in making a diagnosis where no fever is present. It has been found in children of six months who had passed through part of a single summer, and in patients 75 years old who never lived further south than Oklahoma.

Malaria is a disease which comes to every general practitioner in the state several times a year. It is thus an important subject for us all to consider. So important a question is malaria and its prophylaxis, that no less an organization than the Southern Medical Association has a commission to investigate it. This commission was able to ascertain that malaria is present in every one of the fifteen southern states. The morbidity varies from 25 to 800 cases per 1000 population, and the average mortality is 1%. The following statistics from this commission for the state of Alabama will tend to show what an economical question malaria presents. There occurred 122,200 cases of malaria with a death rate of 1% of the cases; thus there were 1222 deaths. Assuming that each case entailed an expense of ten dollars for professional service and medicine, the morbidity alone in the state of Alabama for one year amounted to one and one-third million dollars. Placing a monetary value of $2000 on each life lost, the 1222 deaths from malaria added 2½ million dollars to the cost of malaria. Thus malaria costs Alabama nearly $4,000,000 annually. Those of us who are practicing along the rivers and in the southern side of Oklahoma have the same conditions to meet as obtain in Alabama. I doubt if there is a county in this state which will not show many infections at some time during the summer or fall.

The point which I want to urge above all others is the necessity of routine blood examinations to diagnose malaria. You can't cure it unless you treat it, and you can't treat it unless you suspect it. And there are many cases which you will not suspect unless you make a blood examination. We have been going off after new fads and fancies, after rare and new diseases, and have got away from our most common enemy. Why, I am laughed at down in my town when I make a diagnosis of malaria with the microscope, when I actually see the parasite.

In conclusion I wish to make the following resume:

1. Malaria is present in Oklahoma.
2. It often is obscure—often no fever.
3. It presents a big economical question.
4. We can diagnose it positively.
5. Capsules of quinine are often useless.
6. We can cure it.

In view of these facts and in the light of the 20th century, with its microscopes and other aids to diagnose, I maintain that it is almost criminal not to allow a patient five minutes for a blood examination.

DISCUSSION.

The Chairman: When I came to Oklahoma three years ago I had heard a whole lot about malaria. I have been practicing in Oklahoma City

and did not have very many cases up, especially up under the microscope, and I actually say I have not seen a single case. I have not a big private practice, but I have a lot of laboratory specimens. I have never seen a case of malaria. I have never seen anything that fits the malaria blood. I do not want to open these discussions, but I know that there are men outside of Oklahoma City practicing in the southern and southwest part of the state who have conscientiously used the microscope and they have malaria cases, and there are others practicing in other parts of the state who do not use the microscope and they have malaria very frequently. I would like to have the opinion of the doctors on this paper.

Dr. Bradford: I want to compliment the doctor on the paper. As we all know, who have practiced medicine in Oklahoma for a number of years, about the only kind of malaria we do have are those obscure cases, and ones that recur. I often hear the remark from a doctor that he has not treated a case for a year or two, and that it was true they did not have the typical cases any more. I believe in a great many cases if blood examination was made we would find more malaria at this time. I do not know why Dr. Fishman has not run on to any malaria. I guess it just happened so, for we are no farther south in Shawnee than Oklahoma City and we have cases of malaria over there without any microscope. However, I want to say that a routine blood examination would be all right, because it would take but a short time to make it and it might save a great deal of trouble for some patients, because we know that some other disease or a surgical operation will bring about malaria again.

Dr. Johnstone, Lawton: Six or seven years ago, I judge, I had two chills, and I took some medicine a doctor gave me. A short while after I began going to school I began feeling bad. It seemed to me I had no appetite at all, and I had a headache right along the back of my head—just something terrible. It seemed as if my head would burst open. I did not have a paroxysm until in February, and when I did it was a dandy. I would not go through it again for a twenty dollar bill. This proved to be the plasmodium form, and I want to go ahead and state that I went to several of the best physicians in the city and they prescribed for me so I could take a big dosage of quinine. They did not succeed for awhile.

I remember a case in St. Louis in a hospital. I went to examine the patient's blood and the doctor there laughed at me. He said: "What are you going to examine the blood for?" I told him I was looking for malaria, and the next evening I showed him the prettiest forms of malaria I ever looked at. Cases of malaria are many times covered up.

Dr. L. A. Reily, Oklahoma City: I am very well pleased with the doctor's reading a paper on this line. It shows a scientific tendency that is good. The only way you can pick up a lot of conditions otherwise overlooked is by the routine examination. The northern and the southern doctors have such varied opinions of malaria that a thesis written by a

doctor from either place would hardly coincide with that of the other man from the other end of the country. We do not have many open cases of malaria in Oklahoma any more. I have been here twelve years and we had more of it at first than we have now. We do not have the great number of chills and fever we had at first in this country. I think the doctor was right in placing the atypical form as being the great source of the diagnostic downfall of us physicians. The only way to get at some of these cases is by an examination of the blood. When we have many cases of malaria they cannot be diagnosed from subjective symptoms, and the only way to make an absolute differential examination is with the microscope. I had one case that had had a temperature of 99° or 100° for eight weeks and had been subjected to a rigorous course of quinine and with no help. My examination found a condition of the lungs which absolutely explained the temperature. I think we ought to be more careful in our examinations.

Dr. Hume, Anadarko: A lady in our town spent three years in the Philippines. She had been back two years and came back with chronic malaria. The blood examination at first revealed plasmodium malaria, but she still continued to have attacks of intermittant fever. This summer her physician told me she had the fever and he recently examined the blood and failed to find the plasmodium, and at the same time the fever is controlled in a few days by doses of quinine. At present he tells me that he is unable to find anything, but still she seems to have the fever. She is very well in other ways.

Dr. Sanger: I would like to report a case I had recently adjacent to Oklahoma City. Two physicians looked at this case with me and hooted the idea of malaria. His blood was examined and malaria was reported not to be found. He was diagnosed as pernicious anemia. I suspected malaria when he first came to see me. He complained of numbness of his hands and feet and shortness of breath. Up to this time he had no fever. On the last trip to my office I met him at the head of the stairs as I was going down, and he said: "This is the last time I am coming to see you." I told him he was mistaken. When I came back from the drug store I found him stretched out on my table; his pulse, I think, about thirty or forty a minute and he looked like a patient after he had been dead about twenty-four hours. I had sent him a couple of times to see two other prominent physicians I knew. I did not want him to die on the table and I went to the telephone and called up one of these men and had him to come see the patient. He said the man would die in a few days. "He has got pernicious anemia," he said. They accompanied the man to the hospital and confined him to bed. We put him on pernicious anemia treatment, which was practically nil. At my suggestion, at last, they put the man on quinine hypodermics. He then had about one-half or one degree of fever. They said anything would not do him any harm anyway. So we gave him the injections and that man apparently is as well today as he ever was in his life. I just wanted to report the case.

Dr. Mitchell (closing): As the case reported by the doctor, I saw a case that was as interesting to me as the one he speaks of. It was diagnosed typhoid at first and then went to pernicious anemia. It was cured by hypodermic injections of quinine.

Whenever the diagnosis of the case is not evident or certain, if you would make the examination of the blood, you will be surprised at the number of cases you would call something else—neuralgia or sick headache and so on. You would be surprised at the number of cases that would be cured by the injection of quinine. This man I mentioned, his condition was due to an abscess of the liver and had been seen by several doctors. He took about 600 grains of quinine solution, and still had symptoms of malaria. I finally put him on the injections and he gained thirty pounds under the quinine solution and yet the parasites were still present, and when I put him on the hypodermic the condition cleared up.

The Chairman: I must apologize for saying I had not seen a case of malaria in Oklahoma, for I did treat a case, now that I think of it, I believe was malaria. This case came from out of the city and had chills. The blood examination several times showed no organisms. The count showed a large per cent of lukocytes, and in reading on the subject I found that a large number of lukocytes is indicative of malaria whether or not organisms are found.

DEFECTS WITHIN THE LOWER SPINAL CANAL.

Horace Reed, M. D., Oklahoma City.

PART I.

ACQUIRED LESIONS.

Anatomically, the spinal cord ends at about the upper level of the second lumbar vertebra. Surgically, its lower limit is higher—at a somewhat variable point corresponding to the origin of the fibers of the coccygeal nerve. The part included between these points is the conus terminalis. Proceeding from the apex of the conus is a slender filament of gray substance, filum terminalis, which is enclosed in a tube of pia mater.

The cauda equina is a collection of nerve roots which have their origin in the lower cord and conus. From these roots the lumbar sacral nerves are given off. The cauda is enclosed in a tube of dura mater which extends to the second, or, sometimes, to the third sacral segment, where it ends in a pouch. The filum terminalis and coccygeal nerves perforate this pouch at its lowest pooint and proceed on downward. The arachnoid is continued downward from the conus inside the dural sac, holding the cauda into a compact bundle.

The one structure which we must consider more minutely is the pia mater. It is intimately adherent to the cord and sends a process into the

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Read before the Section on Surgery at Enid, Okla.

anterior fissure. The axones, both afferent and efferent, are furnished with a sheath from the pia, external to the cord. This sheath is termed the primitive sheath, or neurilemma, and without it an axone is incapable of regeneration. In some respects the neurilemma of the peripheral nerves resembles the periostum of the long bones. This is particularly striking when considering the parts those two structures play in regeneration. Gray terms the pia mater the neurilemma of the cord. Such a designation is entirely misleading since the pia exercises no power in cord regeneration.

We need not go into the minute anatomy of the cord here. It is sufficient to state that the fibres which make up the tracts of the cord are aneurilemmic and are incapable of regeneration. This statement may be called into question if we superficially consider the opinions of certain authors. Barker says: "Regeneration of the severed nerve fibres within the spinal cord and brain, is, unfortunately, very much less complete than in peripheral nerves."

From this remark it might be inferred that Barker considers that it can take place. Marinesco at first denied that histologic regeneration of divided axones within the cord could take place, but later confessed that his former position was not quite correct. Strosbe, after injuring the spinal cord and some of the roots, observed a few fibres penetrating the scar tissue at the point of injury. Bickeles noted similar phenomena in man, but remarked that the penetration was very imperfect.

Murphy, in 1907, after an exhaustive consideration of the literature of spinal cord regeneration, concludes that: "Regeneration of the white columns or gray matter of the cord after destruction or division has never been demonstrated experimentally nor authoritatively observed clinically." If, then, we accept these apparent facts as final, we must conclude that there is and will be no surgery of the spinal cord proper except that its aim be prophylactic.

What we have said relative to regeneration of the spinal cord in no way applies to the cauda. The only resemblance which the latter bears to the cord proper is the fact that it is situated in the spinal canal and has a dural covering. The fibres which collectively form the cauda are medullated axones with neurilemmic sheaths. They are, in other words, peripheral nerves situated intra-durally, and as such are capable of regeneration under favorable conditions. A transverse lesion of the cauda, when complete, results immediately in total paralysis—motor, sensory and reflex—of the parts supplied by the nerves which have their exit below the lesion. If co-aptation of the cut ends be promptly and accurately made, regeneration may result. The more proximal parts will have their functions restored first. Likewise the parts supplied by the sacral and coccygeal nerves will be the last in regaining innervation. The following case is illustrative:

A robust young man, while sitting on the floor of a mine, was struck on the left shoulder by about a ton of falling slate. His trunk was hurled violently forward and toward the right by the glancing blow.

Complete motor paralysis of the lower extremity was the immediate result. When I first saw him, two days later, his condition was as follows: Complete motor paralysis of lower extremities; loss of control of sphincter, resulting in retention of urine and incontinence of feces; complete sensory paralysis of left leg and thigh, except on the anterior and inner aspect of the latter; sensory disturbance of the right limb, except for a portion of the thigh.

The region of the back over the first, second and third lumbar vertebrae was swollen and tender on pressure, and just to the right of the median line and opposite the second lumbar segment, a slight bony prominence could be felt. X-Ray showed nothing positive, except that there was no disturbance of the vertebral line.

Six weeks later there was complete restoration of sensation in all the affected parts; considerable restoration of motor function of right limb, and he was able to work the toes of the left foot. A stubborn cystitis had developed. Seven months later he was able to walk with the aid of a cane. At this time a suprapubic cystotomy was performed for vesical stone.

He left the hospital at about the end of ten months from the time he entered, in good condition, except that he had not regained vesical and sphinteric control.

The diagnosis of a lesion following injury of the cord cannot easily be mistaken. The matter of the exact location is not quite so readily determined. If the cord is severed transversely, only the highest point of the injury can be located. This gives no clue as to how extensive the destruction below this point may be. The X-Ray will only show the present relation of bones and fragments, and often will give no indication of the location of the injury. A dislocation of a vertebra of sufficient extent to sever the cord or cauda, may take place which will subsequently be spontaneously reduced and the radiograph will reveal no discrepancy.

When a spinal fracture is limited to a single vertebral body, the radiograph will be of value, and particularly so when there is no dislocation or other external signs of the extent of injury.

A workingman fell from a scaffold, a distance of about 50 feet, striking on his buttocks. There was immediate complete paralysis of lower extermities. He was unconscious for several hours, and was more or less dazed for several days following. There was no external signs of fracture or displacement. An X-Ray taken before he had sufficiently recovered to answer questions with intelligence, revealed a crushing fracture of the second lumbar vertebra.

The subsequent history and present condition of the patient substantiated the diagnosis of destruction of the cauda at this level, with the probable intervention of fragments of bone or tissue between the severed ends.

SURGERY.

The indication for laminectomy is the reasonable belief that conditions necessary for regeneration of the cauda are not favorable without the operation. The success of the operation will depend largely upon the promptness with which it is done following the injury; the carefulness of coaptation of the severed ends, and finally, upon the rigidity with which rest is maintained afterward. It is essential also that the patient be kept in the recumbent position, and, preferably, with the trunk and pelvis incased in a plaster dressing for a period varying from three to six weeks.

The contraindications are:

1st. The difficulties of the operation—the danger of doing harm to uninjured parts.

2nd. Extensive destruction of the cauda, to the extent that the ends could not be accurately coaptated without undue tension.

3rd. Diagnostic difficulties.

Exploratory laminectomy cannot be made with the same degree of impunity as in most other regions of the body.

A contusion, or, we believe, even a concussion of the cord may closely resemble a transverse lesion.

A young farmer was thrown from the seat of a harrow and fell upon the buttocks. Motor paralysis of the lower extremities was complete immediately following the accident, and sensation over the corresponding area was considerably disturbed. Vesical and sphinteric control lost. Two days later he was brought to the hospital. The symptoms were very little changed from what they had been at first. There were no signs of fracture nor of dislocation of spine.

Patient was put to bed and rest enforced. Three weeks later all sensory disturbance had disappeared and motor control was sufficiently regained so that he could walk with the aid of a cane. At this time he left the hospital. Three months from the time he received the injury he reported that recovery was complete.

The operation, which in my opinion is always indicated in traumatic lesions of the cord that are sufficiently extensive to produce paralysis, is permanent cystostomy.

In my experience with these lesions infection of the bladder has invariably resulted. The factors which contribute to this are various and obvious. In all cases of permanent paralysis, with the lesion in the terminal cord, the natural end to be anticipated is death from nephritis. It is argued by some that the nephritis results from ascending infection; by others that it is hematogenous. We will not go into the merits of either theory. Our contention is that if the bladder is properly drained infection of the kidneys is not so apt to take place secondarily, and at the same time the patient's comfort is materially increased. The operation should be performed before infection has taken place, therefore, within a few days following the injury. No serious difficulty should be encountered in closing the fistula should regeneration be complete.

PART II.

CONGENITAL LESIONS.

The coalescence of the neural canal begins in the middle portion. From this beginning it proceeds forward first, and finally, backward. Defects of closure occur more regularly in the parts where coalescence normally takes place latest. Thus we find spina bifida more often in the lumbo-sacral, and next to this, the cervical regions.

The purposes of this paper do not call for a detailed classification of these defects, and we will limit our discussion to those occurring below the conus.

We must recall the fact that in early fetal life the cord proper extends to the lower end of the sacrum, whereas, in adult life, it has retracted to about the level of the second lumbar segment. With retraction of the cord goes the pia mater, except for the filum terminalis. The filum is what might be termed a fetal remain and is of no clinical significance.

A meningocele situated between the conus and the second sacral segment could only contain the dural and arachnoidal membranes in its walls. The nerve elements of a myelocele of the same region could only be neurilemmic medullated nerve fibres. These facts are to be borne in mind in attempted surgery of these defects.

A myelocele or a meningocele does not exist after birth below the termination of the cauda, and, therefore, below the second sacral segment. With retraction of the cord and its membranes, there is left the lower sacral and coccygeal roots occupying the space between the vertebral arches on the sides, and the floor of the canal and the roof formed by the junction of the arches in front and behind, respectively. A defect, which in early fetal life could exist as a meningocele or as a myelo-meningocele, would cease to be such with the retraction of the cord and membranes, and in the absence of the arches—a condition always found in all types of spina bifida; the skin edges meet in the bottom of the groove and become adherent to the periosteum lining the same. Thus we have an obliteration of the canal, either partial or complete, which normally serves as a passageway for the residue of the cauda. The result is an impairment or disappearance of the nerves thus impinged upon—a condition which will be observed clinically by faulty innervation or lack of proper development of the corresponding muscular structures.

A traveling salesman, 21 years of age, in good health, seeks relief from an embarrassing condition. He has always had a weakness of the vesical sphincter; was a bed wetter until about 14 years of age; avoids this now only by getting out of bed at night as often as the bladder fills. He is convinced that he does not have the control of the anal sphincter to the extent that others seem to have, for when the stools are thin he frequently soils himself because of his inability to retain until he reaches the toilet. Examination of the external genitals, bladder and prostate, reveals nothing abnormal. When he bears down, as if endeavoring to

force stool, the pelvic floor flattens out so that the anus projects as far downward as the ischial tuberosities. The anal margin, which ordinarily is corrugated, becomes smooth and there is an undue projection of the anal mucosa.

Examination of the spine reveals a marked dimpling in the median line at the level of the junction of third and fourth sacral segments. The arches below this point are absent.

In true spina bifida, or in spina bifida occulta, occurring in girls, there may be found prolapse of the uterus, partial or complete, depending upon the location of the lesion and the size of the defect. It is also noteworthy to observe that coincidental with congenital spinal cord or caudal lesions, may be found anomalies of development in parts peripheral to the nervous lesions such as, for instancee, imperforate anus and club feet.

A married woman, aged 30, gives a history of anal and vesical weakness dating from birth. At 15 she was operated for imperforate hymen. Twenty months ago gave birth to a child. Labor was remarkably easy and there was no laceration except for an insignificant muco-cutaneous tear. Convalescence was prompt and normal. Now has uterine prolapse and cystitis, due to faulty bladder drainage. Examination reveals a vaginal orifice of normal size. No visible signs of laceration except that of the fourchette. When the patient "bears down" as if for stool, the floor of the pelvis presents a very striking resemblance to that seen in the second stage of labor during uterine contraction, just before the head presents at the vulva. The levator margins could scarcely be recognized as such by the examining finger, but felt more like very thin non-resisting bands. The cervix presented just within the vaginal orifice.

In this patient a very plainly visible defect of the spine, extending up to and partially including the arches of the third sacral segment, was found.

So far as our investigation in the text-books and literature bearing on this subject goes, we have been unable to find an attempted classification of the defects of the spinal canal which occur below the cauda. We have been calling them spina bifida occulta, but the definition of this term which is ordinarily given would not include them.

The knowledge of their existence is of no value so far as treatment is concerned, but they may assume a considerable importance from diagnostic and prognostic standpoints.

Finally, we wish to admit that we have freely consulted and drawn from literature pertinent to this subject. Particularly was Murphy's contribution to Neurological Surgery of help in the preparation of the first part of this paper, due credit for which is hereby gratefully acknowledged.

DISCUSSION.

Dr. Clark, El Reno: I want to deal with the subject from the traumatic side of the question. I have been pleased with the doctor's paper

and the solution of the problem that has confronted so many of us as to the ability of the sphincters to do their work. The operation on the spine is not so simple. I only recall four cases of spinal trouble coming under my care in the last few years, three of which were inoperable. I was particularly interested in one case which was operative, in which a man was riding on a load of baled hay and came through a gate that was built like so many gates we see out in this country, with a high post on each side and a wire stretched across at the top. He did not properly estimate the distance between the top of the hay and the wire and ducked his head to go under. The wire caught him and bending him sharply forward, produced a trauma about the second lumbar vertebra. He was brought to the hospital and for some time he remained there, and his sphincter control was absent. He began to improve until he could move the toes and certain portions of the surface had a return of sensation, and then I felt that as that improvement ended there, that I ought to, in justice to him, undertake to improve the condition. We all know a severed cord cannot be repaired, but where there is a returning degree of sensation I think we are justified in attempting to better the condition. I found some small pieces of bone that had been forced in, and a small fracture, and there was a tenderness over the point that guided me to that. I opened that and removed the particles and had some returning to an increased degree of the normal condition, but the man was a man of small means and soon afterwards was removed from my care to some relative in Texas. I lost track of him beyond hearing from him once or twice six or seven weeks following and he told me he had never sufficiently regained power to walk. There is a case in which I feel sure, could I follow up the case, more improvements could be brought about. Those are the cases that tax the diagnostical ability of a man as to when he should operate for the best interests of his subject.

I certainly enjoyed the doctor's paper and I think we were all benefited by hearing it.

Dr. Long, Oklahoma City: I had occasion about four or five years ago to do my utmost in a case of a young man working on a car side dumping for a railroad company. He was sitting on a side beam and the car came back and pinched him, producing a fracture and a forward dislocation of the first and second lumbar vertebra. The case was placed in a way so we could stretch the spine and a plaster cast placed on it, including the chest and abdomen. Two or three months after that he used crutches and came back through Oklahoma City. When I first examined the case there was a forward dislocation of the spine. I did not examine him in Oklahoma City, but a year or two after that I examined the spine and the cast. Taking the pressure off the spine had allowed the vertebra to return to their position. The four vertebra were all put together as one. The case of a man working in a mine, and realized something was wrong and tried to save himself. One of the supports in a small room in which he was working gave way and allowed a shower of slate to fall on him.

He threw himself partly out of the way, but the slate covered the lower portion of his body to the extent that he said it gave him the sensation as though he was expelling all the abdomen out through the rectum. The lower portion of his body was paralyzed for two or three months. We placed him in a position of rest until a complete return of the functions of the lower portion of the body. I had some instructive observation in watching Dr. Murphy treat a case of paralysis of the lower portion of the abdomen from injury of the spine, where the urine was milked out. These cases brought up the point the doctor brought up in his paper today. I have been doubting how would be the best to handle those cases. I think I arrived at the proper conclusion: Where it can be sufficiently drained without getting cystitis, do not operate; but where there is a tendency to get it, it should be opened up and drained.

If an X-ray is available, an X-ray ought to be used to see whether there is any fracture of the vertebra, and if so to operate and remove the spicula that may be penetrating the cord, but whether or not the man should be moved immediately following the injury, with his plaster cast, to a place where he can be X-rayed immediately, is a point to be considered, and I believe it should be wise to do so, because of the future of the case. If you have a spicula of the bone then the rest with the cast will not recuperate the case.

The Chairman: If there is no further discussion, I'll ask the doctor to close.

Dr. Reed: Further than to thank the gentlemen who discussed the paper, I have nothing to say.

THE IMPORTANCE OF PAIN AND SHOCK IN OPERATIVE MORTALITY.

Leigh F. Watson, M. D., Okahoma City.

The phenomena of pain and shock has been known for many centuries, and clinically studied and classified by many ancient as well as modern surgeons. It is impossible to accurately estimate the degree of afferent nerve stimulation that is requisite to destroy life, because the shock value of every individual varies. While it is probable that shock value is largely a personal factor, or physiological function, it is nevertheless true that there are racial values as well as individual values. Some claim it depends on the state of the internal secretions and their balance. The hyperthyroidal Swiss has a higher shock value than the Italian, and the lively Frenchman is more easily perturbed than the phlegmatic German. A person in middle age has a lower shock value than a child or an old person.

It has been shown that the shock value of an individual varies from time to time, and different parts of the body have different shock values. A blow below the belt will cause acute distress while the same blow on the chest will pass unnoticed. Another element is that of unpreparedness, a false step in the dark may momentarily shake the nerves of the strongest man. A piece of bad news or a terrifying sight produces a distinct psychic trauma or shock. Many people have indeed died of simple frights.

What we term shock is undoubtedly a defensive reaction of the autonomic nervous system against assault that has been committed. If it was not for the protective influence of shock we would succumb more quickly and the reaction would be more intense than now occurs. It may fail at times, or even be too intense for the safety of the individual, but the fact remains that, as Crile has pointed out, the shock mechanism is one forged many generations ago in the history of the race, when some apparatus was necessary to secure instant preparation for flight or withdrawal on occasion of danger.

The most intense form of shock is commonly regarded as those cases of sudden death where there is no precedent disease—death by inhibition—death brought about by events that produce no obvious lesion, death following immersion in water before the patient has time to drown, death following a simple operation where the pulse and temperature remain normal until death occurs from respiratory failure. When, on the other hand, shock falls short of immediate death, there may be profound shock for 24 to 48 hours, which terminates in death or gradual recovery. This is the commen kind of shock, from which people suffer after serious injury or operation.

Shock also has relation to things just prior to operation. Disturbances of the mind just previous to operation are due to fear and anxiety. This is psychic shock. There are many other factors that indirectly produce shock. If the disease for which surgical intervention promises relief is one which affects the nervous system in a depressing way, any delay in operation will bring the patient to the operating room in a condition of shock. In these cases, as in those where the operation is unexpected, the dangers of the unavoidable psychic, anesthetic and operative shock are naturally greater. This is unusually evident in cases of intestinal obstruction and exopthalmic goiter, therefore, the earlier the diagnosis by the physician, the greater the success of the operation, both as to the local disease which demands a cure and the general nervous system which has to stand the trauma of the operative cure. There is a class of cases which, after the infliction of trauma, the subject displays emotional perturbation, rallies, seems to be doing well, and yet ultimately develops symptoms which may be unusually severe or terminate in death.

The cases which recover sometimes pass as traumatic neurasthenia, in which a definite latent period elapses between the symptoms immediately displayed and those that develop later. The cases in which, after a varying period, grave or even fatal consequences may ensue, are those which are referred to as delayed shock.

Common to traumatic neurasthenia and delayed shock are unexpectedness of the injury, and high psychical, rather than physical, value of the causative incident. The prolonged anxiety and stress of shipwreck is not so effective in producing traumatic neurasthenia or delayed shock as is a railway collision. When we are suddenly frightened, if taken off our guard, we turn pale. The blood is diverted from the skin, where it is not

needed, to the heart and lungs, so that these organs are well supplied for the immediate flight prompted by our ancestral origins. Cannon has demonstrated that when animals have been subjected to injury, or deliberately frightened to death, the adrenal system (a part of the mechanism that controls the blood distribution), may be so completely exhausted by its efforts that it becomes powerless and death ensues.

It is my purpose to show that there is a definite connection between death from inhibition, surgiacl shock, delayed shock, traumatic neurasthenic, post-operative ileus, death following trivial injuries, and apathetic death "without apparent reason."

We see the physiological explanation of delayed shock in human beings. Cases of delayed shock are not uncommon, but they are often masked—when an aged person dies a week or two after a fracture of the thigh or other trivial injury. There is usually immediate manifestation of some psychical agitation; but this may pass off. There is a varying period in which the patient may seem to be suffering hardly at all, but there are indications of interference with visceral functions. The blood pressure is affected, and the heart tends to dilate as it loses tone. The urine is scanty. There is constipation, flatulence and shortness of breath. As it may be the respiratory, cardiac, gastric or intestinal symptoms that attract the physician's attention, so if death occurs, it is ascribed to congestion of the lungs, heart failure, pressure of the stomach on the heart, intestinal toxemia or even suppression of urine.

Crile states that the dangers from high blood pressure are embolism, thrombosis, angina pectoris and broncho-pneumonia. Low blood pressure may be either physical or psychic and is usually associated with shock, anemia or hemorrhage, which should be controlled before operation.

When hysteria continues after trauma, the patient will probably recover with little psychical damage. When the early psychical disturbances have play, but are controlled, traumatic neursthenia, or the more marked type of delayed shock may ensue. Sometimes there is no initial hysteria; the subject displayed a peculiar apathy, and death is quite sure to follow. In such cases the autonomic nervous system is thoroughly disorganized, probably by inhibition from above. A woman who does not cry in the presence of a great sorrow is as likely to die as the Bengalese who can not sweat on a summer day.

In traumatic neursthenia the protective mechanism of the body is taken by surprise. There is no preparatory adjustment of the blood distribution in the body. It is easy to understand how, given a high shock value, under such circumstances the protective adaptation may be out of all proportion to the occasion, as when an ocean liner strikes an iceberg or a telephone operator is excited by a rumor of fire.

Henderson of Yale has shown that there is a definite relation between shock, vaso-constriction and that condition of acapnia in which there is such a diminution of carbonic acid gas in the tissues and blood that the respiration is slowed until the carbonic acid gas accumulates up to stimu-

lating strength, and hyperpnoea or dyspnoea returns. In laparotomy such a loss of carbonic acid gas may occur in this way that acapnia is produced, and may be a factor in death under anesthesia or afterwards.

It is well known that mere opening of the abdomen abolishes perstalsis of the stomach and greatly reduces that of the intestines. Motility is not restored for a considerable time after the abdomen is closed. While Henderson thinks acapnia is the cause of shock, Crookshank believes it is a part of the shock, since Crile has demonstrated that the carbonic acid gas is not given off if the displaced viscera are covered with omentum. It is interesting to note that Mr. Arbuthnot Lane covers the intestines with a vaselined silk sheet, during abdominal operations, and it is stated that his shock effects are remarkably slight.

The simplest and clearest cases of fatal apnoea are those which occur after intense pain. When death follows intense physical suffering not complicated by hemorrhage, there are two principal stages. At first the excessive breathing diminishes the carbonic acid content of the blood. If at any time after this condition of acapnia has been induced the pain is greatly diminished and the respiratory center is allowed to relapse into a standstill, fatal apnoea vera may occur.. If, on the other hand, the pain is sufficiently continuous to keep the respiratory center continually excited, then apnoea is prevented and the condition of acapnia becomes more and more acute and general until the circulation fails, and the subject sinks into surgical shock, according to Crile's definition. Both fatal apnoea and the more slowly developing failure of circulation are due primarily to the excessive breathing induced by the painful afferent nerve stimulation.

Henderson says those cases of fatal apnoea, which more than any other interest the clinician, are the failures of respiration under anesthesia. If a patient ceases to breathe in his bed it is his own fault, but if he does so on the operating table the anesthetist has to bear the responsibility. For such cases of apnoea the acapnia hypothesis affords a simple explanation. The anesthesia diminishes the strength of inflowing afferent inflowing irritations. Furthermore, the profound anesthesia raises the threshold of the respiratory center for carbonic acid gas, in other words, the respiratory center of man or animal in profound anesthesia automatically maintains more than the normal carbonic acid gas content in the blood. Thus when man, woman or child has suffered prolonged pain and has thereby been brought into a condition of more or less acapnia, the production of anesthesia by removing the afferent pain stimuli, and also by raising the threshold and diminishing the sensitiveness of the respiratory center for carbonic acid gas, inevitably leads to acapnia.

The acapnia hypothesis of Henderson requires the prevention of excessive pulmonary ventilation. The administration of morphine and full anesthesia diminish the activity of respiraton under pain and thus prevent acapnia. If, however, you administer morphine or chloroform to a subject after he has suffered some time, you hasten fatal apnoea, unless you give carbonic acid gas at the same time.

In India it is customary to partly smother men who have been severely injured. It would probably be wise when a man's legs have been crushed in a railway wreck to require him to breathe into a paper bag to prevent apnoea. The most important factor in the prevention of shock is to prevent the pain.

The elaborate breathing exercises of the Yoga or Vendanta philosophy, practiced for more than a thousand years in India, are means through which, it is claimed, the subject can gain control over the heart rate and other functions, can render himself insensitive to pain, or even unconscious, and can induce mental exaltation and hallucination. In some of the older works on surgery it was directed that prior to a minor operation the subject should for a few minutes perform forced respiration.

The researches of Crile in the cerebral pathology of shock have placed on a scientific basis a satisfactory explanation of the nerve exhaustion effects of sudden, severe, long-continued or oft-repeated mild irritative and painful lesions in the production of neursthenia. While the cure of neuresthenia by surgical operation is necessarily slow and tedious, and in some cases doubtful or impossible, the prevention of this distressing condition is easy, provided the irritative lesions located in the areas abundantly supplied by noci-ceptors—the abdomen, pelvis, rectum, anus, external generative organs, neck, face, etc.—are removed before the brain pathology has become irreparably damaged. Crile's researches, especially the production of shock by summation of slight impulses from trivial irritative lesions, afford ample scientific proof of an old clinical observation, that the best preventative of neuresthenia is a complete removal of all local pathology which may interfere with recovery during convalescence.

Reisman and others have clearly shown that during attacks of biliary colic, cardiac murmurs frequently develop as a result of dilatation. This is due to the increase in blood pressure the result of agonizing pain.

Hysteria is a defense against injury to personal interests, while neurasthenic manifestations are protective to physical stresses. If an hysterical woman is called upon to make some sacrifice, she finds her defense in throwing out of gear the mechanism that should be employed in the ungrateful task.

ARTERIO-SCLEROSIS.

W. G. Little, Okmulgee, Oklahoma.

An old proverb has much of truth in it which says: "A man is as old as his arteries; a woman is as old as she looks," and this disease of arterio sclerosis has been one to be mentioned in the books, but until recent years not considered very seriously nor studied very carefully. As a physiologic concomitant of age, it undoubtedly is a more or less natural entity. That it may be a pathologic condition inducing the phennomenon of age is perhaps nearer the truth if we regard the theories of Elie Metchnikoff with more than passing credence. However this may be, the great classical writers in medicine, pathology and histology are devoting pages

now to this condition where a few years ago they were giving paragraphs, and I think there can be little doubt but that the future will make us all more watchful for this foe to youthfulness than we have been hitherto.

Arterio-sclerosis to most of us has been a vague condition rather than a definite disease entity, having a definite finding, and based on logical and reasonable grounds; having a stable existence in mechanics, and a proportional cause and effect. To point out some of these will be the main object of this paper and if it awakens us to a knowledge of our rustiness in the fields of histology, physiology and pathology, and to how much this knowledge is essential to us in understanding this variable and somewhat intangible disease, the writer will have been amply repaid for any labor he may have devoted to it.

On November 11th, 1912, J. W., age 41, came asking to be told his trouble and gave his history as follows, and being a friend and acquaintance of several years, I knew much of his complaint by way of rumor, he having been of the clientele of another physician in the town. He had been well till something like a year and a half ago, except for "malaria" or "liver trouble," synonomous terms with most laymen and many physicians. There is no history of chills. An appendix operation was done five years ago. He is troubled at times with hemorrhoids and has been constipated for years.. His work for eight years has been that of station agent for the Frisco railway, in which capacity his work has been very heavy. About a year ago he was thrown in a car which was switching, and had his back hurt, which injury incapacitated him from work for six weeks and discommoded him for many months, leaving a permanent injury to the spine.

About a year ago, while over town on business, as he was crossing the street dizziness suddenly attacked him so that he staggered. Feeling so badly, he sought his physician, who told him "he was working too hard," and that a rest was all he needed, when he would feel alright. He resigned his work and spent his time at light employment, and several months at the "springs" in Missouri. The dizziness and all the general discomfort continued, however. He complained of headaches, was very nervous and irritable, easily tired and quite despondent.

The findings in the case were as follows:

Eyes: Normal, vision being 20-20.

Reflexes: Increased.

Heart: Enormously enlarged, the apex being outside the nipple line and displaced downward, being fully 2½ inches from normal location, and the base extended to the right of the sternum by 1½ inches. A murmur (judged to be haemic), was heard over the base.

Liver: Was much enlarged and quite tender.

Spine: Slightly deformed and the seventh and eighth vertebral processes were depressed, flattened and tender, giving rise to considerable soreness and discomfort in that region. This was the result of the fall in the car previously mentioned.

Arteries: Generally hardened.

Urine: 1400 cc in 24 hours. Color: dark straw. Odor: normal. Reaction: acid. Sp. Gr.: 1.015. Total solids, by estimate: 45 grms. in 24 hours. Albumen: none. Sugar: none, Microscopic: Casts—0; Blood—0; Crystals—Normal.

With this picture the patient was told he had arterio-sclerosis. The etiology in his case was considered as being due to the hard, nerve-wearing work he had undergone, and to auto-intoxication, he being a heavy meat eater, and to sluggish bowels.

A discussion in general of this disease may not be amiss by way of emphasizing the facts with which you are all familiar. Let us do so by first considering the normal circulation. To carry on this circulation we have a system of tubes and a great central pump. The tubes leading away from the pump are for high pressure service and are also elastic. The normal pressure maintained for the arteries is about 100 to 120 M. M. of Mercury. The histological makeup of the arterial coats is as follows: The inner lining of endothelium forms the intima; The middle coat of muscle fibres, the media. The outer coat is one of fibrous elastic tissue, making altogether an elastic, distensible tube, that receives the volume of blood from the systole of the heart by distension, and keeps up the even, regular flow by contraction during the heart's diastole. With the normal circulation each organ secures its proportionate supply of blood and thereby the nourishment of the entire system is provided for, and the waste materials eliminated. When some foreign element or unnatural condition is injected into this economy, derangement is invited, and disease may supervene as it does in arterio-sclerosis.

For the purposes of demonstrative comparison let the pathology of this disease be considered next. We have besides the gross pathology of the tissue, what might be termed also a pathology of function. The former is manifested by various grades of a process that may be found in every stage. And while the disease attacks earliest and perhaps oftenest, large vessels under greatest stress, yet it also may involve all the vessels, or the vessels of a particular organ. In the larger vessels the various stages of pathological degeneration may be tabulated as follows:

1. There are areas of fatty degeneration of the intima which areas are yellow and not raised.

2. These areas are larger and are gelatinous in consistency and raised above the surface—i. e., projecting into the lumen of the vessel and are common at the orifices of vessels or where one vessel branches off from a larger trunk.

3. These gelatinous areas become larger and form plaques.

4. And in this stage the plaques may have a depostion of calcareous substances thus forming calcified plaques.

5. Areas of atheromatous softening, and by progressive degeneration give rise to a more advanced stage of atheromatous degeneration.

6. Atheromatous ulcer, opening into the lumen of the vessel and attacking very seriously the integrity of the vessel wall.

7. Here the entire intima is involved, also the media, which is atrophied by the irritative lesion and encroached upon by pressure of the inflammatory infiltration and often by the calcification or even ossification of the vessel wall, hence giving rise to dilatation.

These changes give rise to the functional pathology, shown in the heightened blood pressure, the over-worked heart, and the underfed organs. This derangement of function is brought about because of a mechanical and functional basis.

The mechanical demonstration is evident in the loss of elasticity of the artery which demands an increase in the force of the propelling organ to insure the velocity and the volume of the blood to be supplied to the system. Again the partial closing of the lumen of the vessels is equivalent to the substitution of a smaller vessel to do the same work. All this throws a constant and added amount of work on the heart.

The functional basis further is found in a lessened blood supply to some organs, which invites pathological changes in their tissues, lessens the efficiency of their work, which in turn may be a part of the vicious circle reacting to induce more disease and derangement in the metabolic processes of the body. In other portions of the body, owing to the general high blood pressures, some organs will have an over plus of blood and in the stress of that condition will fail to function properly, due to the congestion, or as is frequently the case, the vessel will rupture and consequent phenomena of hemorrhage will follow.

Turning now from the pathology let us review the etiology of this disease.

1. **Wear and Tear of Life:** As an ordinary result of constant use and the supplanting of epithelial by fibrous tissue as a concomitant, phyiologic change due to old age. Also the constant work of the circulatory system. The blood passes through the aorta at the rate of about ten inches per second, and has a distending force of 2½ pounds per square inch. There are 100,000 beats of the heart in 24 hours, so that the work of the heart and principal vessels during 40 or 50 years is very great, and no wonder that usage damage should arise.

2. The acute infections are an important factor in the etiology of this disease and among these acute infections syphilis stands at the head of the list and is notorious as a producer of sclerosis. Other infections are typhoid, influenza, scarlet fever, some of these being diseases of childhood, producing a sclerosis early in life.

3. **Intoxications.** These may be of two kinds or from two sources:

(a) **Exogenous,** (or the ones from the outside). The most important of these are alcohol, lead and tobacco. Any one alone may produce sclerosis of the vessels in one individual while it may not in another. Experimentally lead will produce a sclerosis in animals in a short time. So also

will certain drugs, as epinphrin. Hence lead workers are in danger, other than from lead poisoning, and the alcoholic adds to his disability of an early old age, the disability to pursue callings of trust and responsibility.

(b) **Endogenous.** These poisons arise as a result of perverted metabolism and the most prolific factor I believe is auto-intoxication arising from the alimentary canal. The excessive eating of meats is perhaps the most active agent in producing derangement. The meat being only partly digested, may putrefy in the intestine and give rise to a toxin of violent intensity. This, to my mind, is the foundaton of many more ills than we credit it with. That this toxin is a violent poison is evidenced by the excessive disturbance of the whole system caused by the so-called ptomaine intoxication whch is so often seen and read about in this age of "canned" living.

4. **Conditions that keep up high blood tension:** There are many things that keep up high blood tension, but two are very important, namely: over-eating and hard labor. (a) Over-eating and drinking act in two ways to induce sclerosis, by keeping the blood vessels constantly distended, and by the primary and secondary processes of metabolism by which substances may be formed which are directly toxic to the vessels, or as Hare described, "A hyper pyraemia, a state in which the system is damaged by products of imperfect metabolism." Allbut says, "One main cause of rising arterial pressure in middle life is excess of feeding, that is to say, of food in excess of work and excretion."

(b) Excessive muscular and mental work will tend to increase the natural wear and tear of life and masten the sclerosis of the vessels. This does not mean that every excessive eater or drinker will have this disease, or that every man who labors hard at manual labor will be a victim of this malady. But with a history of these causes and the presence of a sclerosis, an easy deduction is offered.

The diagnosis rests on four cardinal findings. Thickened peripheral vessels, hypertrophied left ventricle, high blood pressure and albumen in the urine.

The prognosis in general is not good.

The treatment should be along hygienic, dietetic and medicinal lines. An even contemplative life free from strenuosities; a low, nourishing, non-stimulating diet, with a minimum of meats; and some of the drugs that will reduce blood pressure somewhat, strengthen the heart, and promote the general health.

The essential for the physician, here, as in most diseases, is for him to have a clear picture of the mechanical, functional, physiological and pathological conditions. Without these he is working by guess and not in an intelligent, scientific manner as the wise physican should.

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Local news of possible interest to the medical profession, notes on removals, changes in address, deaths and weddings will be gratefully received.

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EDITORIAL

THE SURGEON THE SOLE JUDGE.

Justice Garrison, of the New Jersey Supreme Court, has recently decided that a surgeon has a right to extend an operation beyond the limits originally contemplated, without permission from the patient, when in his judgment, such an extention is necessary and the patient is under an anesthetic.

Dr. Victor Parsonnet of Newark was sued for assault and battery and muleted to the extent of a one thousand dollar verdict because he operated more extensively than had been agreed upon with the patient. It seems the patient applied for an operation, the nature of which is not stated, which two years before had been operated unsuccessfully, and Dr. Parsonnet, learning that he was a poor man, agreed to operate free. During the operation it was found that the condition was more serious than he had supposed, and that unless an extension of the operation was made, the patient would possibly die. This was done, the patient recovered and is now well.

The suit is one of those remarkable expressions of gratitude so often

shown by paupers and the viler tribes of humanity with which the human race is infested.

Justice Garrison upheld the common law principle that a surgeon must get consent to operate, but holds that the unconscious condition of the patient would prevent this, and that the law must therefore give way before the exigency of the case.

THE USE OF IODINE.

Many writers within a very short period of time have called the attention of physicians to the use of iodine in routine surgical work. It is not necessary to call the attention of students and clinicians to this drug, but as many practitioners do not appreciate its great value, a note here is not amiss.

The three and one-half per cent solution is the favorite. It will be found useful for office work where rapid sterilization of the skin is desired, preceded by benzine to remove all possible fat, its application rendering the skin more sterile in a shorter time than any known measure. In no case should water be used prior to the application if possible. The drug has a very useful field in obstetrical work. If, prior to delivery, it is applied to the vulva and pudendal hair, the sterilization will be found sufficient.

Some workers, just prior to instrumental delivery, apply this to the vaginal surfaces and cervix, and hold that it is highly efficient and preventative of ophthalmia and infection in the most suspicious cases.

The drug is also used by some with marked success in endometrial affections, it being introduced through the os under pressure, and is said to largely take the place of curettements in these conditions. Its introduction prior to curettements also renders the operation safer.

Dr. J. W. Bovee of Washington has for some time introduced it under high pressure into the uterus, prior to abdominal operations on the uterus and its appendages. He states that it often goes entirely through the tubes and is found free in the abdominal cavity. He states that at first this seems alarming, that the appearance of the parts on opening the abdomen resembles that of a ruptured ectopic, but that in no case has harm resulted from its use in that manner. Its well known use in stitch abscess, following operations in sinuses containing pus and abscesses, needs no comment here. It will be found one of the most useful drugs a physician can carry. In emergency cases a physician with iodine is a physician prepared to cope with the situation.

We can offer no better suggestion to those having industrial workers to treat for emergency injuries, those employed in shops, railway yards, mills and mines, than a close adherence to iodine in the initial dressing of the patient. These cases are often found to have grease, dirt, cinders and clothing ground into the tissues, a condition almost impossible of cleaning, but if the surfaces are cleaned with benzine or turpentine care-

fully, all foreign substance scrupulously removed and the entire field painted with the iodine solution the results will be found more than satisfactory in nearly all cases so handled.

WOMEN'S CLUBS AND THE PUBLIC HEALTH.

One of the matters of congratulation to Health authorities, and which will go far towards effecting a final solution of many of the vexing conditions in connection with the public health, is the activity of the women's clubs in this respect.

It has long been conceded that nothing like the ideal in public health matters can be attained without the co-operation of the people. As has been pointed out heretofore, this co-operation can only be obtained by interesting them and showing them that it is a matter of extreme interest to them. The enactment of laws for the protection of the public health are necessary and are all good enough in their place, but they are inadequate without co-operation. Whenever the health authorities become too active, a certain class of people, pseudo-scientists, educated and created by such isms as the Christian Science, Chiropractors, the Osteopaths, etc., at once protest against what they are pleased to call vicious governmental interference with the rights of the individual, the cry of paternalism is raised, and they prate loudly and long of the constitutional rights of the individual. Their system seems to hold that they must have their constitutional rights, even if the rights of others are infringed upon. An examination of the laws in force in the states of the Union today with reference to the sale of adulterated foods and drugs, the practice of medicine, the treating and healing of the sick, the suppression and limitation of infectious disease, reminds one of a circus. They are good, bad and indifferent. The good effects of a good law are often nullified by an assinine court decision, the court, apparently, deliberately starting out to nullify.

The people should know, but doctors cannot tell them all, that as a rule disease follows well known biological laws; that there is nothing mysterious about it. They should know that it is no more difficult to prevent the spread of consumption among men than it is to prevent the spread of Johnson grass on the farm; that it is just as easy to prevent diphtheria as it is to prevent certain kinds of vegetable growth. Owing to the hostile influences about them, they do not accept the dictum of the medical profession, but turn to ill-advised, immature sources for information.

We can reach these people best through the women's clubs, and from time to time it should be the duty and pleasure of those physicians who are capable of doing so to meet and co-operate with these clubs in the best possible manner.

WANTED—Nurses to take training in 3-year course. School acceptable to Oklahoma State Board. Pay $5 per month first year, $7.50 per month second year, $10 per month third year. For particulars and prospectus, address Superintendent of Nurses, El Reno Sanitarium, El Reno, Oklahoma.

GENERAL NEWS

The Mayes County Medical Society met at Strang July 3rd. Dr. G. W. Tilly read a paper on "Anti-Typhoid Vaccines;" Dr. Carl Puckett on "Diseases of Infancy and Childhood;" Dr. W. M. Nagle, of Muskogee, on "Refraction," and Dr. J. L. Adams on "Malaria." Dr. J. L. Hollingsworth tendered a dinner to the visiting physicians.

The Commanche County Medical Society held its last meeting of the season at Medicine Park, twelve miles from Lawton. The members enjoyed a swim, after which supper was served at the Medicine Park Hotel. The meeting was held at the Club House. The paper of the evening was given by Dr. L. J. Moorman, of Oklahoma City, subject, "Arterio Sclerosis." The visiting physicians were Drs. L. J. Moorman, E. S. Ferguson, Oklahoma City; H. A. Conger, D. Long, E. B. Erie, Duncan, Oklahoma.

Dr. John W. Riley of Oklahoma City spent some time in Johns-Hopkins Hospital, Baltimore, during July.

Dr. L. F. Watson, Oklahoma City, has recently visited the clinics of New York City.

Dr. B. R. Tubbs of Ft. Gibson has moved from that place to Sallisaw.

Dr. M. O. Moore of Braden, Oklahoma, has moved to Spiro.

Dr. H. A. Moore of Arapaho has located in Canton.

Dr. T. B. Hinson of Thomas has moved from that place to Enid.

Dr. M. H. Levi is in Chicago taking post graduate work. Dr. Levi contemplates the establishment of a hospital at Elk City.

Dr. Augusta I. True of El Reno was found guilty in the Federal Court at Enid with using the mails to defraud. A sentence of ninety days was given in the case.

Dr. and Mrs. Walter Jones of Enid recently motored to Rochester where Dr. Jones will do post graduate work. On their return they will visit relatives in Brookfield and other Missouri points.

The Tillman County Medical Society met at Quanah. The paper of the day was by Dr. J. H. Hansen on "Typhoid Fever." Dr. and Mrs. Fuquah entertained the Society with music and refreshments.

The McIntosh County Medical Society met July 8th in Checotah. The paper of the day was by Dr. J. N. Shaunty on "Syphilis." The visitors were Drs. W. B. Newton, M. M. Rowland and A. B. Montgomery.

The Beckham County Medical Society met at Erick, July 10th. A banquet was given at the Pullman Hotel. A large number of physicians attended the meeting. It is said to have been one of the best Beckham County has had for a long time.

Dr. J. Hutchings White and Mrs. White of Muskogee have a cottage at Lake Geneva, Wis., where they are spending the summer.

Dr. G. E. Hartshorne of McAlester sailed for Vienna and other European points on the 24th of July. Dr. Hartshorne will be absent for several months doing post graduate work in the eye, ear, nose and throat centers of the country.

The profession of the state will be shocked to learn of the sad death of the wife of Dr. S. M. Jenkins, which occurred recently in Enid. It is said that an intractable and uncontrollable hemorrhage following the enucleation of the tonsils caused her death. The sympathy of the profession of the state is extended to Dr. Jenkins in this great trouble.

Dr. F. B. Fite and family, Muskogee, will spend the summer at their summer home, Davidson's River, North Carolina.

Dr. J. C. Mahr, State Commissioner of Health, and Mrs. Mahr are taking a short vacation with Dr. Mahr's mother in Kansas.

A CORRECTION.

Oklahoma City, July 10, 1913.

Dr. C. A. Thompson, Muskogee.

Dear Doctor: In the July issue of the "State Journal," under the caption of "Discussion" on Dr. Garrett's paper, I am credited with rather a lengthy talk. This is an error, probably the stenographer's. It should be credited to Dr. Kelso of Enid. Please make the proper change.

Fraternally yours,

JOHN F. KUHN, M. D.

SOME DIAGNOSIS THIS—A TRUE STORY.

By A. Wag.

A short time ago one of Oklahoma City's prominent young physicians was called to see a baby patient and upon responding to the call, the following probable dialogue took place:

Mrs. A.—Good morning, Doctor. I want you to look at my baby. He has a peculiar thing on his body, (indicating Gluteus Maximus Region).

Dr. B.—How long has this been here?

Mrs. A.—Oh, I think for some little time, but really I only noticed it a few days ago.

Dr. B.—Of course the baby has not complained much with it, has he?

Mrs. A.—No, not much, but he seems a little more cross the past few days than he has been before.

Dr. B.—(Carefully examining the baby and looking wise). Well, madam, this is a rather interesting case, and while I have seen a great many of them and ordinarily, unless one is accustomed to seeing this kind of cases, they would call this a boil, but it is not; it is what we call a supernumerary nipple; by that I mean a nipple situated on some part of the body where it should not be. It would never have caused any trouble and if, at a little later date, you want it removed, it can easily be done by a surgeon.

Mrs. A.—Well, Doctor, what is the cause of this condition?

Dr. B.—Well, this is caused by portions of embryonal material entering into the composition of the mammary gland, being carried to distant parts of the body and growing there.

Mrs. A.—Well, Doctor, I will let you know in a day or so how the baby is getting along.

Dr. B.—Alright, telephone me.

A few days later the telephone rings.

Mrs. A.—Hello Central! Give me Main 4-11-44! Yes, Main 4-11-44! Hello! Hello! Is this Dr. B?

Dr. B.—(Over the 'phone.) Yes, this is Dr. B.

Mrs. A.—Well, Doctor, I thought I would call you up and tell you how the baby is getting along?

Dr. B.—Oh, yes, how is he, Mrs. A?

Mrs. A.—Well, Doctor, he is getting along nicely now. The "risin'" that he had and which you called an extra nipple, broke last night, and as a consequence he is feeling better.

Dr. B.—(Greatly surprised) Is that so? I am surprised indeed, I do declare.

Mrs. A.—Well, is there anything you could suggest, Doctor, for it?

Dr. B.—No, I guess if you keep it clean and keep a little cloth over it, it will get well in a few days.

Mrs. A.—Well, Doctor, this evidently was a boil, was it not?

Dr. B.—Yes, I guess it was. Well, goodbye Mrs. A.

(Hangs up the 'phone.) Then Dr. B. proceeds immediately to look up Hirst on Obstetrics and turns to a description of supernumerary nipple.

A DISEASE THAT BAFFLES.

The season when the services of the physician are urgently demanded by the victim of vasomotor rhinitis is now approaching—a season dreaded not alone by the patient, but, not uncommonly, by his medical adviser as well. Particularly is this true of the latter if he has not kept abreast of the most modern ideas on the therapy of hay fever. In any event the disease is one that tries the patience and calls for the application of remedial agents that have been proved beyond peradventure.

In the treatment of hay fever the physician rarely has an opportunity for the application of preventive measures. His help is usually sought after the attack has manifested itself—when the patient is suffering (acutely, in most cases) from the ravages of the disease. Effective treatment is then demanded—and promptly. Administration of the suprarenal substance in the form of its isolated active principle, Adrenalin, is undoubtedly the wise procedure at this juncture. One feels safe in saying this in view of the long and effective service which has been rendered by this agent in critical emergencies. Adrenalin Chloride Solution and Adrenalin Inhalent are the forms chiefly used. The first named should be diluted with four to five times its volume of physiological salt solution, the latter with three to four times its volume of olive oil. Both are administered in spray form to nares and pharynx by means of an ordinary oil-atomizer.

AMERICAN ASSOCIATION FOR CANCER RESEARCH.

At the Annual Meeting of the American Association for Cancer Research, May 5, 1913, the following resolution (the report of the Committee on Statistics and Public Education) was unanimously adopted:

It is the sentiment of this Association that:

(1) The present instruction of medical students in the symptoms and early diagnosis of cancer is seriously deficient.

(2) The medical curriculum should include special lectures in the clinical departments dealing specifically with this subject.

(3) The universities should provide competent lecturers in this subject to address the local medical societies.

(4) The Associate Members of the Association should be urged to take up the question of the proper methods of approaching the public on the subject of cancer.

(5) The activities of this Association should at present be chiefly confined to the education of the medical profession.

(6) This resolution shall be sent to the Deans of the medical schools and the Secretaries of the State medical societies in the United States and published in the medical press.

NOTICE.

The Oklahoma School for the Blind is now permanently located at Muskogee, Okla. The state has provided for some thirty or forty more pupils than were enrolled last year, and any person between the ages of six and twenty-one whose vision is defective and who is physically and mentally able to profitably pursue any one of the courses taught, is eligible for admission. The education of the blind through a state appropriation is made absolutely free. Any one interested in the school, or having a child without sight or even partially blind, should write for catalog and information to O. W. Stewart, Supt., Muskogee, Okla.

NEW BOOKS

BLOOD PRESSURE.

Blood Pressure, From the Clinical Standpoint. By Francis Ashley Faught, M. D., of the Medico-Chirurgical College, Philadelphia. Octavo of 281 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Price $3 net.

Within the past few years the reading of the blood pressure and conclusions therefrom has advanced very rapidly. Only a few years ago the leading insurance companies of the country began to demand of their examiners blood pressure readings even before the use of the instrument was general among physicians, and no doubt we have all been surprised at the record shown by this scientific instrument conflicting with clinical observations of our opinions of a particular risk.

Aside from its value to the insurance examiners, the sphygmomanometer has a vast field, and is of decided value in the early discovery of arterio-sclerosis, disease of the kidney and heart and many other conditions not necessary to enumerate.

This book seems to be very complete in its conclusions of blood pressure instruments and interpretations generally. It should appeal decidedly to those interested in the work.

VACCINE AND SERUM THERAPHY.

Including also a study of Infections, Theories of Immunity, Specific Diagnosis and Chemotheraphy by Edwin Schorer, B. S., M. D., Dr. P. H. Formerly assistant Thomas-Wilson Sanitarium for Children, Mount Wilson, Maryland; assistant Rockefeller Institute for Medical Research, New York City, and at one time a member of the faculty of the University of Missouri, of the University of Kansas, and of the Department of Preuntive Medicine and Hygeine, Harvard University. Second edition, cloth, illustrated, three hundred pages. Price $3. C. V. Mosby Co., St. Louis, 1913.

The tremendous strides made in the last decade in the matter of serum and vaccine therapy may well be said to be one of the rimarkable wonders of scientific medicine. No fact deducted from past experience has escaped the interest and the specific therapist if it may be used in the furtherance of diagnosis of disease or its treatment; the ingenuity of man hardly seems to have a bound when we ponder on the strides made in this field of medicine alone. While a working knowledge of a great deal of this class of work belongs essentially to the labaratory, every alert physician must have and grasp the significance of serum therapy and vaccines in order to be abreast of the times, so it follows every work on this subject, is eagerly grasped by all classes of the profession.

This volume seems to be an accurate exposition of infections, immunity, specific diagnosis, specific therapy, specific chemotherapy, diagnosis treatment and prophylaxis in the different infections. The technique of many of the little things which the busy physician needs in his every day work is well shown. The work s a commendable one.

SURGICAL CLINICS OF JOHN B. MURPHY, M. D.

Volume II, Number 3, (June 1913.)

The Surgical Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago, Volume II, Number 3 (June 1913), Octavo of 185 pages, 62 illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Published Bi-Monthly. Price per year: Paper, $8; cloth, $12.

Murphy's Clinics for June, 1913, is just as good as those that have gone before. We believe we have said enough when we say that all physicians' good will is extended the clinics. Among the notable things in this issue is the treatment of Pott's disease (the operation of bone grafting for its cure as used by F. H. Albee of New York City, with also a talk by Dr. Albee and a clinic at the Mercy Hospital on this subject.)

Albee's operation is certainly an ingenious one and so far seems to be the most effective thing advanced for the relief of this class of sufferers, and this issue of the clinic should commend itself to the surgeon who desires to consider that phase of surgery.

The issue also contains Dr. Murphy's operation for Procidentia Uteri, which operation is nearly as extensive as a hysterectomy and therefore probably not intended to be popular. It also contains the report of a clinic held by Dr. Murphy before the Chicago Surgical Society with a demonstration of fifty patients, all of which were bone operative cases.

GONORRHEA IN WOMEN.

Gonorrhea in Women. Its Pathology, Symptomatology, Diagnosis, and Treatment. Together with a review of the rare varieties of the disease which occur in men, women and children. By Charles C. Norris, M. D., Instructor in Gynecology, at the University of Pennsylvania. Octavo of 521 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth $6 net; half morocco $7.50 net.

This book is beautifully executed as to type, drawings and color plates. The author seems to have searched all modern literature for his conclusions, and the bibliography is one of the most complete ever involved in one book. Beginning with history of this infection of women, he has searched all literature from the time of Christ almost, to the present. The work is the most complete monograph on this subject, and invades the field of the gynecologist decidedly in pointing out the procedure of many conditions arising from gonorrheal infections in women.

As above intimated, the quotations from other writers are voluminous. The methods of treatment of different stages and classes of the infection are very prolific.

It is a good book. One that will be promptly received, and should be referred to often by the general practitioner who has this class of cases to contend with.

The author is to be congratulated on individual detail and minutae he has impressed upon the work. The profession will appreciate his efforts in this respect.

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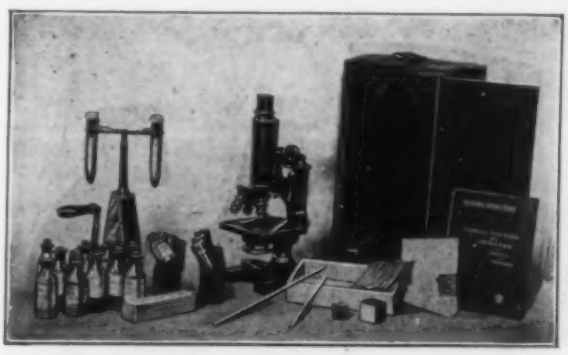

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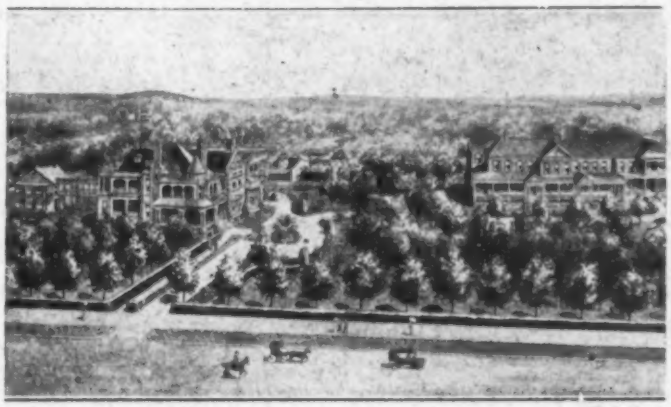

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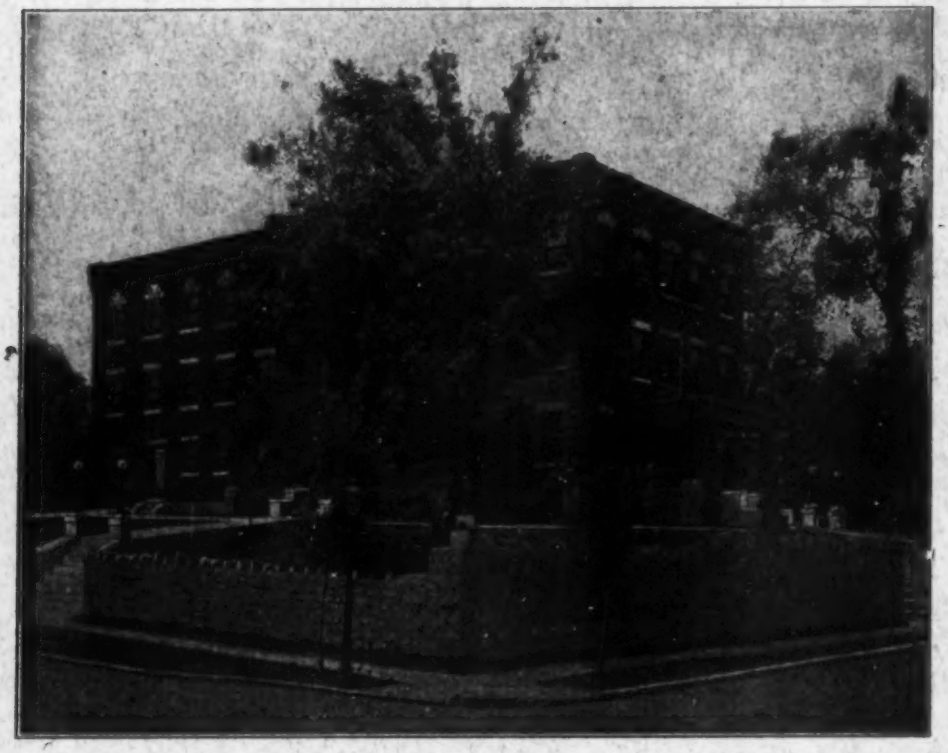

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